Seismic to Simulation workflow tools: a daily solution for subsurface challenges

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It has become common for oil companies to adopt an integrated Windows-PC software solution that help them solve their subsurface challenges - from seismic interpretation through reservoir simulation. It eliminates the communication problems that exist between different software packages and associated technical disciplines. All work processes contribute to develop and refine the volumetric earth model, static to dynamic.

This presentation will focus on the full workflow as well as on specific domains such as Seismic Advanced Interpretation, Geomodeling, Advanced Mapping, Volumetrics and Uncertainty. The capacity to do Audit trail will also be exposed and highlighted as a common workflow for Modeling While Drilling.

Seismic Tools

Fully integrated with the geological and engineering tools, the seismic toolkit allows for rapid 2D & 3D seismic interpretation. Seismic data can be directly sampled into the 3D reservoir model to predict pay, and bias reservoir property distribution using a geo-statistical approach. An extensive library of attributes and volume rendering techniques can help identify hydrocarbon indicators and fracture patterns.

Ant Tracking: automated structural interpretation tools Understanding the trends of fault surfaces and fluid flow properties across fault systems is one of the most important aspects when it comes to reservoir characterization. For many years it has been possible to spatially interpret horizon reflections but interpretation of fault surfaces or planes has been more subjective.

The Automated Structural Interpretation module uses an advanced computing algorithm ’Ant Tracking’ to overcome this subjectivity. Now interpreters using 3D seismic data can spend time understanding the trends of fault surfaces and make correlations from the automatically extracted fault patches instead of creating fault surfaces individually and manually.

By focusing on structural geology rather than conventional segment picking, Automated Structural Interpretation reduces conventional interpretation time while increasing the level of geological detail, structural awareness and reservoir understanding.

Geology Tools

Identifying and recovering hydrocarbons requires an accurate, high resolution geological model of the reservoir structure and stratigraphy. The geology capabilities are all seamlessly unified with the geophysical and reservoir engineering tools and enable an integrated study by providing an accurate static reservoir description that evolves with the reservoir.

Reservoir Engineering Tools

With a reservoir model in place, the simulation workflow helps to perform streamline simulation, reduces uncertainty and assists in future well planning. Advanced up-scaling techniques allow recreating geologically accurate models for full reservoir simulation.

Workflow benefits

The common environment and workflow automatically captures the knowledge as the work progresses. This eliminates the information mismatch or information loss that is common when using individual applications. New data can be easily integrated , running advanced volumetrics and uncertainty workflows as well as rapidly updating earth models , lowering the overall E&P risk.